Andrews Survey & Engineering, Inc.

Land Surveying • Civil Engineering • Site Planning

July 6, 2017

Mr. Joseph Laydon, Town Planner
Grafton Memorial Municipal Center
30 Providence Road
Grafton, MA 01519

Re: ***Proposed Exterior Fleet Storage Area***
Hilltop Self Storage of Grafton
100 Milford Road, Grafton, MA

Dear Mr. Laydon:

Pursuant to an application submitted by Hilltop Self Storage of Grafton, LLC for the outdoor storage of vehicles at the above referenced property, Andrews Survey & Engineering, Inc. (ASE) has been requested to review the approved stormwater system design for compliance with Standard 5, Land Uses with Higher Potential Pollutant Loads (LUHPPL) of the Massachusetts DEP Stormwater Policy.

Land uses with higher potential pollutant loads are defined in 310 CMR 10.04 and 314 CMR 9.02 and include "exterior fleet storage areas". Stormwater runoff from uses meeting these criteria require the use of a treatment train that provides a minimum of 80% TSS removal prior to discharge, shall provide for at least 44% TSS removal prior to discharge to the infiltration BMP, and shall also be designed to treat 1.0 inch of runoff (times the total impervious area) at the post-development site. The self-storage facility was designed and approved utilizing a BMP treatment train that includes deep sump, hooded catch basins and proprietary treatment units directed into an infiltration basin with a sediment forebay. Previous calculations provided in the Stormwater Management Report dated February 4, 2015, revised April 1, 2015, approved by the Grafton Planning Board provided 95% TSS removal prior to discharge and 82% TSS removal prior to discharge into the infiltration basin. The stormwater management system was previously designed to treat 0.5 inch of runoff, but because of the addition of the exterior fleet storage area will now be required to treat 1.0 inch of runoff. Previously, the Required Water Quality Volume (Vwq) (cubic feet) was 2,798 c.f. and the design of the infiltration basin provided 5,752 c.f. The proposed exterior fleet storage area will include a minor increase in the impervious area and calculations to treat 1.0 inch of runoff based on approximately 1,000 s.f. of additional impervious area and are as follows;

Water Quality

$$Vwq = (Dwq \div 12\text{inches/foot})\ (Aimp)$$

Where:
Vwq = Required Water Quality Volume (cubic feet)
Dwq = Water Quality Depth – 1.0 inch
Aimp = Impervious Area (s.f.)

Vwq Required
Inf. Basin = (1.0 ÷ 12inches/foot) x 67,152 s.f. (previous) + 1,000 s.f. (new) = 5,679 c.f.
Vwq Provided
Inf. Basin = 5,752 c.f.

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Due to the increase in impervious area of 1,000 s.f., the required recharge volume and forebay volume sizing calculations have also been reviewed and are as follows;

Required Recharge Volume

0.60 inches runoff x total impervious area = Recharge Volume, "A" soil
0.35 inches runoff x total impervious area = Recharge Volume, "B" soil
0.25 inches runoff x total impervious area = Recharge Volume, "C" soil
0.10 inches runoff x total impervious area = Recharge Volume, "D" soil

0.35 inches x (1ft. /12in.) x (33,841) sq. ft. = 987 cubic feet.*
0.25 inches x (1ft. /12in.) x (33,311 s.f. previous) + 1,000 s.f.(new) = 715 cubic feet
Total New Volume Required for Recharge = 1,702 cubic feet

*Previous on-site soil testing showed areas of B soil within the watershed area

Recharge Volume Provided
Infiltration Basin = 10,686 cu. ft

Forebay Sizing

The forebay volume is based on 0.1-inch over the contributing impervious area.

Volume required = 0.1 inches x (1ft. /12in.) x 67,152 s.f. (previous) + 1,000 s.f. (new) = 568 c.f.
Volume Provided Infiltration Basin = 1,235 c.f.

For the purposes of Stormwater Management, the existing infiltration basin provides the required volume to treat 1.0 inch of runoff as required in Standard 5 and therefore complies with this section of the MassDEP Stormwater Policy. It is anticipated that the exterior fleet storage will be constructed in a location and manner that allows runoff to be directed into the existing stormwater system treatment train and Standard #5 shall be met. Additionally, due to the increase in impervious area, required recharge volume and forebay volume sizing calculations show that the volume required is provided in the existing infiltration basin.

We hope this serves your needs at this time. Should you have any questions or require additional information, please contact this office.

Very truly yours,
ANDREWS SURVEY & ENGINEERING, INC.

Travis R. Brown
Senior Project Engineer

C: Hilltop Self Storage of Grafton, LLC
Graves Engineering, Inc.
Grafton Conservation Commission

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